

OCT 22 2007

## PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**In Re Application of**

**HARCHANKO, J.S.**

**Serial No. 10/665,530**

**Filed: 22 Sept 2003**

**For: OPTICAL ELEMENT/DEVICE  
MOUNTING PROCESS AND  
APPARATUS**

Group No. 2873

**BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37**

**MS Appeal Brief - Patents**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 223 13-1450**

Sir:

In response to the Final Office Action dated November 22, 2006, Appellants on May 22, 2007 requested an Appeal to consider the issues raised in the Final Office Action. Accordingly, this Brief on Appeal Under 37 C.F.R. §41.37 is being filed. The fees required under § 41.20(b)(2) should be charged to Deposit Account No. 50-3828.

This brief contains items under the following headings as required by C.F.R. § 41.37 and M.P.E.P. § 1206:

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- 02 FC:E40
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**I. Real Party in Interest**

The real party in interest for this Application is MEMS Optical Inc., as evidenced by an Assignment recorded on 02/27/2004 at Reel 015019, Frame 0187.

**II. Related Appeals and Interferences**

To the best of Appellant's knowledge, there are no other prior or pending appeals of this Application, or patent interference proceedings, or judicial proceedings which may be related to, directly affect, or be directly affected by, or have a bearing on the Board's decision of this Appeal.

**III. Status of Claims**

In the Application on appeal, claims 15-27 are pending. Claim 15 is independent. Claims 15-27 are rejected and are on appeal.

**IV. Status of Amendments**

The Amendment filed on May 22, 2007, has been entered, as stated in Item 7 of the Advisory Action dated June 15, 2007. There are no un-entered amendments to the claims.

**V. Summary of the Claimed Subject Matter**

Claim 15 is directed to a multi-optical element device comprising: a reference optical element (e.g., 10, Fig. 7; 610, Fig. 8)); a mounting system (e.g., 300, Fig. 5B; 400, Fig. 6), wherein said mounting system is formed by etching substrate(s)

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(e.g., 30, Figs 6, 7, 8) to form a recess (e.g., 60, Fig. 3B) to receive the reference optical element, where said recess at least partially conforms to the shape of said reference optical element, and where said reference optical element is attached to said recess in said substrate, said mounting system contains etched substrate(s) forming etched structures (e.g., 20, 30, 50, Figs. 7, 8) upon which optical devices can be attached; and at least a first optical element (e.g., 510, Fig. 7; 510, 620, Fig. 8) attached to a predetermined structure (e.g. 20, Fig. 7) of said etched structures. (See e.g., specification: pages 8-9, paragraphs [0032-0033]; page 10, paragraphs [0034-0035]; pages 12-13, paragraphs [0040-0041]; pages 13-14, paragraph [0042].)

18. (Original) The multi-optical element device according to claim 15, wherein said etched structure (e.g., 20, 30, 50, Figs. 7, 8) is covered with a filling compound (e.g., 410, Fig. 6) to change the index of refraction. (See e.g., specification: page 13, paragraph [0040].)

26. (Previously Presented) The multi-optical element device according to claim 15, wherein the reference optical element is a lens having a convex surface (e.g., 10, Fig. 7; 610, Fig. 8) and wherein said recess (e.g., 60, Fig. 3B) has a curved shape to at least partially conform to the convex shape of said reference optical element. (See e.g., specification: pages 8-9, paragraph [0032]; page 10, paragraph [0034].)

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27. (Previously Presented) The multi-optical element device according to claim 15, wherein said etched structure (e.g., 20, 30, 50, Figs. 7, 8) forms a cavity and wherein said reference optical element is located inside said cavity and the filling compound (e.g., 410, Fig. 6) is used to fill said cavity. (See e.g., specification: pages 7-8, paragraph [0031].)

#### **VI. Grounds of Rejection to be Reviewed on Appeal**

The Examiner has finally rejected: claims 15-16, 18, and 20-25 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 7,006,426 (Chiu); and claims 17 and 26-27 under 35 U.S.C. §103(a) as being unpatentable over Chiu. Each of the items raised is addressed below.

#### **VII. Argument**

**A. The Chiu reference neither explicitly nor inherently discloses "a reference optical element ... and at least a first optical element attached to a predetermined structure of said etched structures" as recited in independent claim 15.**

Claim 15 is directed to a multi-optical element device which includes a reference optical element and at least a first optical element. The optical elements may be attached to a mounting system. The mounting system may be formed by etching substrate(s). The etched substrate(s) can form a recess to attach the reference optical element, and can further include a predetermined structure to attach the first optical element.

Appellant respectfully submits Chiu fails to disclose all of the features recited in claim 15, and provides a brief summary of the Chiu reference as follows. Chiu

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initially discloses a clear glass wafer 10 which is used to mass produce multiple copies of lens elements 12. The plurality of lens elements 12 are formed by etching away portions of the wafer 10. (See col. 1, lines 28-33; Fig. 1.) Chu further discloses a clear glass wafer 20 which is etched in a different pattern to produce multiple copies of base elements 22. After formation of the wafers 10 and 20, the lens elements 12 and the base elements 22 are separated from the wafers by a conventional cutting operation. (See col. 2, lines 1-11; Fig. 2.) After separation, each lens element 12 and base element 22 are assembled into an optical unit 40, wherein the lens element is mounted on a base element 22. (See col. 2, lines 54-64; Fig. 4.)

In the Advisory Action dated June 15, 2007, the Examiner asserts that of the plurality of Chiu's lens elements 12 formed on wafer 10, "one of which is the reference element, the others of which comprise additional optical elements, and thereby at least a first optical element are attached to recesses in etched substrate 20 as claimed" (Advisory Action: page 2, lines 6-8).

Appellant respectfully submits that the Examiner is improperly interpreting the Chiu reference. Chiu does not show optical unit 40 having one lens element 12 attached to another copy of lens element 12. The Examiner cannot interpret lens element 12 as both a "reference optical element" and "a first optical element," as recited in claim 15.

Specifically, in the Final Rejection dated November 22, 2006, the Examiner has alleged that "there are multiple optical elements "12" attached to the mounted system of Chui et al '426 and therefore one of the optical elements is the reference

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element and the others are the "at least first optical elements" (Final Office Action: page 7, line 18 – page 8, line 1). However, Appellant respectfully reiterates that this is not taught by Chui and that element 12 cannot be both the alleged reference optical element and the first optical element.

Regarding element 12, Chui expressly discloses the following:

Referring specifically to FIG. 1, a clear glass wafer 10 is shown with multiple lens elements 12 therein, the lens elements having been defined by etching away portions of the wafer. Before the lens elements 12 are etched to arrive at the configuration shown in FIG. 1, certain surface features are formed, as described below in connection with FIG. 3. In particular, each element 12 has a slot 14 that preferably extends halfway down through the element to enable formation of a reflective surface therein. The elements 12 are supported as part of the etched wafer 10 by vertical glass rods 16 that remain after portions of the wafer have been etched out.

(See Chiu: col. 1, lines 28-39.) Clearly the multiple lens elements 12 are related to the manufacture of the lens elements 12, not the combination of element 12 and 22. Chui further state regarding the combination of elements 12 and 22:

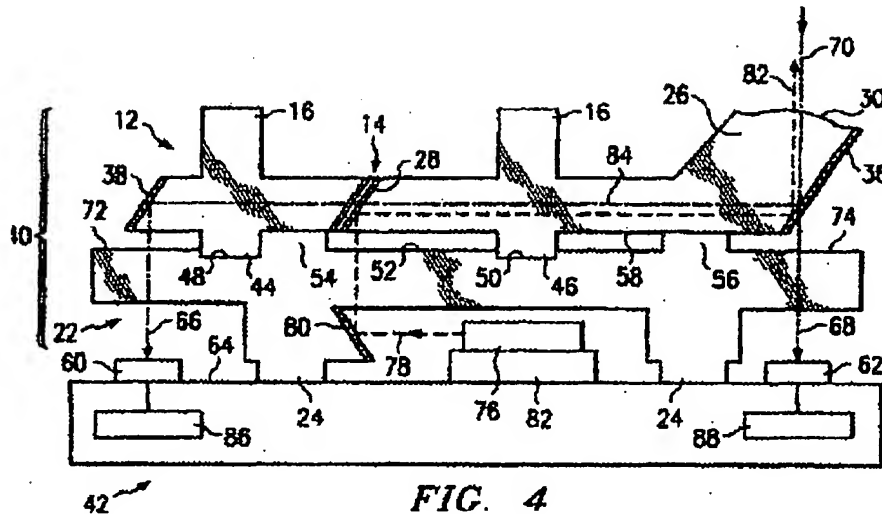
Referring to FIG. 4, a side view of an assembled optical unit 40 is shown supported by a semiconductor chip 42, which functions as an electro-optical interface for the optical unit 40. The optical unit 40 and chip 42 together define an electro-optical device for reading an optical disc (not shown). The optical unit 40 includes a lens element 12 mounted on a base element 22 in the manner indicated.

(See Chiu: col. 2, lines 54-60.) This arrangement is specifically illustrated in Fig. 4, which is reproduced below.

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Clearly from the foregoing, there is no teaching or suggestion to add an additional element 12 so that "one of the optical elements is the reference element and the others are the "at least first optical elements", as alleged in the Final Office Action. Instead, element 12 forms part of an optical unit for reading optical disks as illustrated in Fig. 4 above. Adding the additional structures as suggested would render the device useless. Accordingly, Chui clearly does not disclose "the identical invention ... in as complete detail as is contained in the ...claim", as is required under 35 U.S.C. § 102.

As stated in MPEP § 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaa! Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The Chui reference

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applied by the Examiner neither expressly nor inherently describes every feature of Appellant's claimed combinations as detailed in the foregoing arguments.

Accordingly, Appellant respectfully submits that the applied Chiu reference does not anticipate independent claim 15 as alleged by the Examiner.

**B. The Chiu reference neither explicitly nor inherently discloses "wherein said etched structure is covered with a filling compound to change the index of refraction" as recited in dependent claim 18.**

In the Office Action dated March 16, 2006, the Examiner asserted that the "reflective thin films" taught by Chiu sever as a "filling compound" as recited in Appellant's claimed combinations.

Appellant respectfully submits that a reflective thin film is not a filling compound as alleged and that one skilled in the art would not consider the reflective thin films taught by Chiu to be a filling compound. (See Office Action: page 4, lines 11-15.)

Specifically, Appellant respectfully points out that the terms "reflection" and "refraction" are not interchangeable. Refraction may be defined as "the bending of a ray or wave of light, heat, or sound as it passes obliquely from one medium to another of different density, in which its speed is different, or through layers of different density in the same medium" (emphasis added) (Webster's New World College Dictionary, Fourth Edition, 2005).

Chiu clearly shows that reflective thin films formed on the glass surface of the elements 12 and 22 which include a transition metal having a high reflection value. (See col. 2, lines 32-36.)

Accordingly, Appellant respectfully submits that the applied Chiu reference does not anticipate dependent claim 18 as alleged by the Examiner.



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**C. The Chiu reference neither explicitly nor inherently teaches "wherein said recess has a curved shape to at least partially conform to the convex shape of said reference optical element," as recited in dependent claim 26.**

As stated in MPEP § 2143.01, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 USPQ 494, 496 (CCPA 1970).

In the Final Office Action, the Examiner failed to properly consider the claim language "to at least partially conform to the convex shape of said reference optical element" as recited in claim 26.

In the rejection, the Examiner indicated that Chiu fails to specifically disclose an optical element having a convex surface shape "to fill a curved shaped [sic] of a recess of the mounting structure," (Final Office Action, page 5, lines 11-13). Appellant submits this language set forth by the Examiner is not the feature recited in claim 26.

Moreover, to cure this alleged "deficiency" of Chiu, the Examiner merely provided the conclusory statement that:

[I]t is well known in the art of optical elements for optical elements to be convex shaped and for the recesses of the mounting structure to have a curved shaped [sic] for the purpose of providing a more uniform distribution of light through the optical device.

(See Final Office Action, page 5, lines 13-16.) Appellants submit that the Examiner failed to establish a *prima facie* case of obviousness because no supporting reference was provided to make up for Chiu's alleged deficiency.

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Because the Examiner failed to properly consider the features recited in claim 26, and because the Examiner failed to establish a *prima facie* case of obviousness, the rejection claim 26 must be reversed and should be considered allowable over the prior art.

**D. The Chiu reference neither explicitly nor inherently teaches "wherein said etched structure forms a cavity and wherein said reference optical element is located inside said cavity and the filling compound is used to fill said cavity," as recited in dependent claim 27.**

In the Final Office Action, the Examiner indicated that Chiu fails to teach or suggest all of the features recited in claim 27. (See Final Office Action, page 6, lines 8-9). The Examiner attempts to cure this deficiency by merely asserting the conclusory statement that

[I]t is well known in the art of optical elements for the elements to be held together by cavities filled with adhesive for the purpose of forming strong bonds between the optical elements.

(Final Office Action: page 6, lines 9-11.) Because no secondary reference was provided as evidentiary support, the Examiner failed to establish a *prima facie* case of obviousness. See MPEP § 2143.01.

Accordingly, claim 27 should be considered allowable over the prior art and respectfully request that the rejection be reversed.

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#### **F. Dependent Claims 16-17 and 19-25**

Appellant also respectfully submits that the remaining dependent claims 16-17 and 19-25, which all depend from either directly or indirectly from independent claim 15, are patentable for at least the same reasons as the independent claim from which they depend.

#### **VIII. CLAIMS**

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A include the amendments made in the After-Final Reply filed by Appellant on May 22, 2007.

#### **IX. EVIDENCE**

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the Examiner is being submitted.

#### **X. RELATED PROCEEDINGS**

No related proceedings are referenced in Section II, above.

#### **CONCLUSION**

Appellants respectfully submit that claims 15-27 are patentable over the applied art and that all of the rejections and objections of record should be reversed.

If necessary, the Commissioner is hereby authorized in this, concurrent, and

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future replies to charge payment or credit any overpayment to Deposit Account No.  
50-3828 for any additional fees required under 37 C.F.R. § 1.16 or 1.17, particularly  
extension of time fees.

Respectfully submitted,

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Dated: 10/22/07

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## APPENDIX A: CLAIMS

1-14. Canceled.

15. (Previously Presented) A multi-optical element device comprising:

a reference optical element;

a mounting system, wherein said mounting system is formed by etching substrate(s) to form a recess to receive the reference optical element, where said recess at least partially conforms to the shape of said reference optical element, and where said reference optical element is attached to said recess in said substrate, said mounting system contains etched substrate(s) forming etched structures upon which optical devices can be attached; and

at least a first optical element attached to a predetermined structure of said etched structures.

16. (Original) The multi-optical element device according to claim 15, wherein said reference optical element and/or said first optical element are made from glass.

17. (Original) The multi-optical element device according to claim 15, wherein said reference optical element and/or said first optical element are made from GaP.

18. (Original) The multi-optical element device according to claim 15, wherein said etched structure is covered with a filling compound to change the index of refraction.

19. (Original) The multi-optical element device according to claim 18, wherein the filling compound is Epoxy-Master Bond EP19HT.

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20. (Original) The multi-optical element device according to claim 15, wherein the size of said reference and first optical elements are between 1 meter and 1 nanometer.

21. (Original) The multi-optical element device according to claim 15, wherein the size of said reference and first optical elements are between tens of centimeters and 1 nanometer.

22. (Original) The multi-optical element device according to claim 15, wherein the size of said reference and first optical elements are between several millimeters and 1 nanometer.

23. (Previously Presented) The multi-optical element device according to claim 18, wherein the size of said reference and first optical elements are between several millimeters and 1 nanometer.

24. (Previously Presented) The multi-optical element device according to claim 15, wherein the reference optical element and the first optical element are aligned along substantially the same optical axis.

25. (Previously Presented) The multi-optical element device according to claim 15, wherein the reference optical element and the first optical element are aligned in a substantially perpendicular direction with respect to a line through the center of each optical element.

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26. (Previously Presented) The multi-optical element device according to claim 15, wherein the reference optical element is a lens having a convex surface and wherein said recess has a curved shape to at least partially conform to the convex shape of said reference optical element.

27. (Previously Presented) The multi-optical element device according to claim 15, wherein said etched structure forms a cavity and wherein said reference optical element is located inside said cavity and the filling compound is used to fill said cavity.

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**APPENDIX B: EVIDENCE**

(None)



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**APPENDIX C: RELATED PROCEEDINGS**

(None)